

### **REMARKS**

Claims 1-5 are present and have been examined in the current application. A Petition for Extension of Time for two months accompanies this Response.

On pages 2-4 of the Office Action, claims 1-5 are rejected under 35 U.S.C. § 102(b) as being anticipated by U.S. Patent No. 6,337,762 to Ueno (Ueno). The Examiner's rejection on this ground is respectfully traversed.

Among the limitations of independent claim 1 which are neither disclosed nor suggested by Ueno is the requirement for "a delay unit for causing said second light signal to be inputted to said second nonlinear optical element after said first light signal is inputted to said first nonlinear optical element" and "wherein a time by which the inputting of said second light signal is delayed by said delay unit is shorter than a relaxation time of the nonlinear refractive index change in said first and second nonlinear optical elements."

The Office Action cites Ueno, Fig. 12, element [39] as disclosing such delay unit. However, the device identified by reference numeral [39] is labeled as a "Feedback Control System." Ueno describes element 39 of Fig. 12 as follows: "[t]he attenuation amount of the optical attenuator 42 is controlled by the feedback control system 39." Ueno, col. 11, ll. 55-56. Feedback control system 39 is not a delay unit, rather, it is a control system that controls the operation of an attenuation unit. Further examination of Ueno reveals no disclosure of a delay unit for delaying the arrival of the second light signal to the second nonlinear optical element, as required by claim 1.

Furthermore, Ueno does not disclose a delay element that provides a delay time that is "shorter than a relaxation time of the nonlinear refractive index change in said first and second nonlinear optical elements," which is also required by claim 1. Ueno discloses that when wavelength conversion of an (RZ) return-to-zero light signal is conducted, the delay time is required to be adjusted according to the bit rate of the RZ light signal. In contrast, Applicant's Specification discloses that wavelength conversion of a non-return-to-zero (NRZ) light signal is conducted, the delay time is not required to be adjusted according to the bit rate of the NRZ light signal. *See* Specification, page 24, lines 23 to 25. More specifically, it is described as "there is no need to change the time difference  $\Delta T$  according to the operating bit rate."

Moreover, while Ueno's disclosure relates to a RZ light signal, the present invention relates to a NRZ light signal. Ueno neither discloses nor suggests "a first input port to which a non-return-to-zero light signal is inputted" as Applicant has argued in the response to the First Office Action.

Ueno discloses a configuration that outputs the wavelength-converted RZ light signal when the RZ light signal is inputted. However, if a NRZ light signal were inputted to a device disclosed by Ueno, a NRZ light signal would not be outputted. This is because in a state which the nonlinear waveguide in both arms of a Mach-Zehnder optical circuit is continuously-excited, changes in the refractive index in the both arms cancel each other out, and thus, the NRZ light signal to be inputted is "1" while the wavelength-converted NRZ light signal is "0." This issue is described in "Problem which the Invention Should Solve" of Applicant's Specification.

As described above, the configuration which relates to the RZ light signal and the configuration which relates to the NRZ light signal are different. In other words, an identical configuration cannot correspond to both the RZ light signal and NRZ light signal. Thus, the present invention and the invention disclosed by Ueno are different in terms of the configuration.

In addition, claim 1 of the present invention recites "an attenuation unit for attenuating said second light signal inputted to said second nonlinear optical element below said first light signal inputted to said first nonlinear optical element." The amount of nonlinear phase shift induced when the second nonlinear optical element is excited is made not to be the same as the amount of nonlinear phase shift in the first nonlinear optical element at that point in time.

In contrast, Ueno's disclosure relates to "an adjusting device which adjusts the optical intensity of said first input light to give adjusted input light" and "a control device ... controls said adjusting device according to said output supervisory light to adjust the optical intensity of said first input light."

The amount of nonlinear phase shift induced when the second nonlinear optical element is excited is the same as the amount of nonlinear phase shift in the first nonlinear optical element at the given time, and an output optical intensity of the wavelength converter becomes zero at that point in time.

The RZ light signal is formed by this apparatus and a feedback control device is utilized to improve the extinction ratio. Thus, the attenuation unit disclosed by Ueno does not provide disclosure of the claimed attenuation unit for alternating NRZ light signals.

Thus, a *prima facie* case of anticipation has not been made, because Ueno does not anticipate the recited limitations of independent claim 1. In the absence of any disclosure or suggestion of these claimed features of the invention, claim 1 is believed to be in condition for allowance.

Claims 2-5 depend from independent claim 1 and incorporate by reference all the limitations found therein and are therefore allowable for the same reasons as those discussed above. These claims include further limitations which, in combination with the limitations of claim 1, are neither disclosed nor suggested in the art of record, and are therefore further allowable.

In view of the above remarks, the Applicant believes the pending application is in condition for allowance.

Dated: May 19, 2009

Respectfully submitted,

By 

Robert G. Gingher

Registration No.: 45,755

DICKSTEIN SHAPIRO LLP

1177 Avenue of the Americas

New York, New York 10036-2714

(212) 277-6500

Attorney for Applicant